

CLAIMS:

1. A drive assembly for at least partially driving a vehicle, such as a golf buggy or cart, a trolley, or a parcel carrier, which is adapted to be pushed or pulled by an operator in a forward direction or a reverse direction, the drive assembly including:
  - i. a wheel adapted to be mounted for rotation about an axle;
  - ii. an electromagnetic drive assembly adapted to rotate the wheel about the axis; and
  - iii. a means responsive to the operator initially moving the vehicle in the forward direction or the reverse direction to actuate the electromagnetic drive assembly to continue movement of the wheel in the selected direction.
2. The drive assembly defined in claim 1 wherein the drive actuation means includes:
  - i. a means for sensing the direction of movement of the wheel; and
  - ii. a control means responsive to the sensing means for actuating a switch or other means to actuate the electromagnetic drive assembly to continue to drive the wheel in the initial direction of movement selected by the operator.
3. The drive assembly defined in claim 2 wherein the control means includes a timed standby mode state which is activated by an operator-initiated input signal for

allowing the operator a predetermined time period in which to move the vehicle in the forward or reverse directions, whereby the standby mode state deactivates if the vehicle is not moved within the time period and a further input  
5 signal is required for reactivating the standby mode state in order to actuate the electromagnetic drive assembly.

4. The drive assembly defined in claim 1 wherein the wheel includes an internal chamber which houses components  
10 of the electromagnetic drive assembly.

5. The drive assembly defined in claim 4 wherein the electromagnetic drive assembly includes a plurality of magnets located in the chamber and supported to rotate  
15 with the wheel.

6. The drive assembly defined in claim 5 wherein the magnets are arranged so that one end of each magnet faces the chamber and the ends of adjacent magnets are of  
20 opposite polarity.

7. The drive assembly defined in claim 4 wherein the electromagnetic drive assembly further includes a single phase or a multi-phase stator located in the chamber and  
25 supported to be stationary with respect to the axle.

8. The drive assembly defined in claim 7 wherein the stator is a three-phase stator.

30 9. The drive assembly defined in claim 7 wherein the stator includes a plurality of poles extending radially from an axis of rotation of the wheel and one or more coils wound around the poles, with the number of coils equalling the number of phases.

35 10. The drive assembly defined in claim 7 wherein the stator is a multi-phase stator, and wherein the poles are

divided into a number of groups that equals the number of phases, and the poles in each group are wound with a separate coil from the coil or coils used to wind each other group.

5

11. The drive assembly defined in claim 10 wherein the stator is a three-phase stator, and wherein every third pole is wound by one of three separate coils.

10

12. The drive assembly defined in claim 1 wherein the electromagnetic drive assembly further includes a DC power source.

15

13. The drive assembly defined in claim 3 wherein the electromagnetic drive assembly includes a dc power source located in the chamber.

14. A golf buggy that incorporates the drive assembly defined in claim 1.

20